2022 IEEE/ACIS 23rd **International Conference on** Software Engineering, Artificial Intelligence, Networking and **Parallel/Distributed Computing** (SNPD 2022)

Taichung, Taiwan 7-9 December 2022



**IEEE Catalog Number: CFP2279A-POD ISBN:** 

979-8-3503-1042-9

## Copyright © 2022 by the Institute of Electrical and Electronics Engineers, Inc. All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

 IEEE Catalog Number:
 CFP2279A-POD

 ISBN (Print-On-Demand):
 979-8-3503-1042-9

 ISBN (Online):
 979-8-3503-1041-2

ISSN: 2639-5495

## Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA

Phone: (845) 758-0400 Fax: (845) 758-2633

E-mail: curran@proceedings.com Web: www.proceedings.com



## **Table of Contents**

Keynote	1
Cognitive Activities during Software Engineering Process	
Simon Xu	1
Data Mining and Machine Learning	2
Graph Database-modelled Public Transportation Data for Geographic Insight Web Application  Marielet Guillermo, Maverick Rivera, Ronnie Concepcion, Robert Kerwin Billones, Argel Bandala, Edwin Sybingco,  Alexis Fillone, Elmer Dadios	2
Development and Validation of an Explainable Deep Learning Model to Predict Adverse Event During Hospital Admission in Patients with Sepsis  I-Min Chiu, Yu-Ping Chuang, Chi-Yung Cheng, Chun-Hung Richard Lin	8
Stepwise Regression Machine Learning Models for In-Hospital Mortality Prediction in Patients after STsegment Elevation Myocardial Infarction (STEMI)  Chi-Yung Cheng, I-Min Chiu, Chun-Hung Richard Lin, Xin-Hong Lin, Fu-Cheng Chen, Ting-Yu Hsu	14
Goal-Driven Context-Aware Service Recommendation for Mashup Development  Xihao Xie, Rahul Ramachandran, Tsengdar J. Lee, Seungwon Lee	
Detecting Design Patterns in UML Class Diagram Images using Deep Learning  Xun Zhang, Hironori Washizaki, Nobukazu Yoshioka, Yoshiaki Fukazawa	27
Instructions with Complex Control-Flow Entailing Machine Learning Saurabh Shinde, Harneet Singh Bali	33
Small Probability of Fatality from Theorem of Bayes at the Monkeypox Pandemic  *Huber Nieto-Chaupis**	40
Quantum Mechanics of Theorem of Bayes Modeled by Machine Learning Principles  *Huber Nieto-Chaupis**	45
The Approach of Machine Learning to Optimize the Bank-Customer Interaction at Pandemic Epochs  *Huber Nieto-Chaupis**	50
A Full-reference Video Quality Assessment Method for 4K UHD Video based on Multi-Feature Fusion  Geng Yi, Shi Ping, Pan Da	55
	61
Towards Cooperative Games for Developing Secure Software in Agile SDLC  Mithun Vaidhyanathan, Weisheng Si, Bahman Javadi, Seyit Camtepe	61
Artificial Intelligence	69
Optimal Network Models for Reconstructing 3D Point Cloud from a Single 2D Image  Huan-Yu Chen, Chuen-Horng Lin, Yan-Yu Lin	69
A Deep Learning Model for Predicting Damaged Points via Random Vibration Signal Analysis  Matthew Sands, Jongyeop Kim, Jinki Kim, Seongsoo Kim	75
Ensemble Deep Learning Model for Damage Identification via Output-Only Signal Analysis  Matthew Sands, Jongyeop Kim, Jinki Kim, Seongsoo Kim	83
Attention Mechanism, Linked Networks, and Pyramid Pooling Enabled 3D Biomedical Image Segmentation  Pooja Ravi, Srijarko Roy, Indira Dutta, Kottilingam Kottursamy	91
Advanced Quantum Inspired Evolutionary Algorithm for Multivariate Optimization  Sai Siddhartha Vivek Dhir Rangoju, Om Prakash Patel, Neha Bharill	97
Classification and Characterization of Memory Reference Behavior in Machine Learning Workloads  Seokmin Kwon, Hyokyung Bahn	

Multi-Agent Reinforcement Learning Reward Engineering via Stochastic Game Evaluation  Ajay Kattepur	109
Artificial Intelligence of Things Enabled Fungiculture in Shipping Container  Boon Siong Wee, Cheng Siong Chin, Anurag Sharma	115
Machine Learning and Bayes Probability For Detecting Camouflaged Mini Pandemic at the Waves of Covid-19  *Huber Nieto-Chaupis**	120
A Model of Integrating Bert and BiGRU+ Attention Dual-channel Mechanism for Investor Sentiment Analysis of Stock Price Forecast  Huawei Ma, Jixin Ma, Shengbin Liang, Wencai Du	126
Image, Speech, and Signal Processing	132
Balance Graphs: An Aid for Studying Convolutional Neural Networks  Lyell Embery, Eva Ignatious, Sami Azam, Mirjam Jonkman, Friso De Boer	132
Realization of Laser Object Vaporization Locating Based on Low-cost 2D LiDAR  Meng-Sheng Tsai, Yuan-Hong Guan, You-Xuan Lin, Meng-Hua Yen	140
Probabilistic Neural Synapse Based in Quantum Mechanics  Huber Nieto-Chaupis	144
IoT and Computer Vision Based Aquaponics System Nazib Ahmad, Mehedi Hasan, Mhamudur Rohomun, Raihana Irin, Rashedur M. Rahman	149
Software Testing	156
Formal Specification and Verification of Drone System using TLA+: A Case Study  Madhusmita Das, Biju R. Mohan, Ram Mohana Reddy Guddeti	156
Cause-effect Graphing Technique: A Survey of Available Approaches and Algorithms  Ehlimana Krupalija, Emir Cogo, Šeila Bećirović	162
The Study on Security Online Judge System Applied Sandbox Technology  Jong-Yih Kuo, Zhi-Jia Wen, Han-Xuan Huang, I-Ting Guo	168
Internet Technology and Applications	173
On-Site Monitoring of Forging Press: An Application of Volapu IIoT Suite  Dashuai Guo, Po-Hsun Chueh, Deyang Liu, Joseph. K.H. Wang	173
Theory and Simulation of Multipurpose Antenna for Detection and Degrading of Viruses in Times of Pandemic Huber Nieto-Chaupis	179
E-Commerce and its applications	183
The Role of Organizational Factors and Trust on FinTech Adoption in Indian Financial Organizations  Lakshmi Sujatha Grandhi, Santoso Wibowo, Marilyn Wells, Srimannarayana Grandhi	
Human Factors for the Adoption of Blockchain Technology: A Case of the Australian Retail Sector  Ashim Nikunj Chapagain, Srimannarayana Grandhi, Jahan Hassan	189
Special Session 1: Measured Signal Collection, Processing and Applications	194
Design and Implementation of AI aided Fruit Grading Using Image Recognition  Hang Hong Kuo, Daiby Sunandan Barik, Jun You Zhou, Yi Kai Hong, Jun Juh Yan, Meng Hua Yen	194
Developing Low-Cost Mobile Immersive System MA-VRIOT with Physical Activity Interactions by Integrating IOT Technology	200
Pai-Hsun Chen	200
Yu-Ping Gao, Ruey-Maw Chen	204

Real-Time Traffic Sign Detection for Self-Driving and Energy-Saving Driving Based on YOLOv4 Neural Network Chi-Chun Chen, Yuan-Hong Guan, Nabila Rizqia Novianda, Chung-Chen Teng, Meng-Hua Yen	208
Combining OpenPose with BiLSTM for Violence Detection in Long-Term Care  Shao-Wei Chu, Chuin-Mu Wang	
Deep Learning Used to Detect Gear Inspection  Jia-Xian Jian, Chuin-Mu Wang Wang	216
Special Session 2: Industrial Internet of Things Architecture, Security and Innovating Applications	220
A Non-normal Warning System for Dam Operation Using Machine Learning  Meng-Wei Chang, I-Hsien Liu, Chuan-Kang Liu, Wei-Min Lin, Zhi-Yuan Su, Jung-Shian Li	220
Undeniable Vaccine Production Protocol with Blockchain and IPFS  Ming-Te Chen, Jih-Ting Wang	225
Speical Session 3: Computational Science/ Intelligence Applied Informatics	230
Independent Sets Extraction Graph Coloring Algorithm Using Beam Search	
Kentaro Akashi, Kazuaki Yamaguchi	230
Special Session 4: Artificial Intelligence	235
StyleFormerGAN-VC:Improving Effect of few shot Cross-Lingual Voice Conversion Using VAE-StarGAN and Attention AdaIN	on-
Dengfeng Ke, Wenhan Yao, Ruixin Hu, Liangjie Huang, Qi Luo, Wentao Shu	235
A Full-reference Video Quality Assessment Method for 4K UHD Video based on Multi-Feature Fusion	
Geng Yi, Shi Ping, Pan Da	N/A
Author Index	247